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**UTILITY APPLICATION**  
**OF**  
**SUEN CHING YAN**  
**FOR**  
**UNITED STATES PATENT**  
**ON**  
**LIGHTED HEADWEAR**

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# **LIGHTED HEADWEAR**

## **BACKGROUND OF THE INVENTION**

### **Field of the Invention**

This invention relates generally to lighted headwear, and more particularly to lighted headwear that may be used for ornamental or safety reasons.

### **Description of the Related Art**

Many different ornamental and safety lighting systems are available. However, the available systems may have limitations, including size, complexity, cost and appearance. What is needed is a small, simple, low-cost lighted headwear system.

## **SUMMARY OF THE INVENTION**

The present invention is a small, simple, low-cost lighted headwear system including headwear including a crown, and an illuminating device configured to couple to the crown of the headwear.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is a perspective view of a lighted headwear system according to one embodiment of the present invention.

Figure 2 is an exploded view of an illuminating device according one embodiment of the present invention.

Figure 3 is a plan view of an illuminating device including a bottom housing and base according to an embodiment of the present invention.

Figure 4 shows an illuminating device coupled to headwear according to the embodiment in Figure 3.

Figure 5 shows the addition of power elements to the embodiment in Figure 4.

Figure 6 shows the addition of a top housing to the embodiment in Figure 5.

Figure 7 is a perspective view of lighted headwear according to another embodiment of the present invention.

Figure 8 shows an exploded view of lighted headwear according to the embodiment in Figure 7.

Figure 9 is an exploded view of an illuminating device according to another embodiment of the present invention.

Figure 10 is a perspective view of yet another embodiment of lighted headwear according to the present invention.

Figure 11 shows a coupling configuration according to one embodiment of the present invention.

## **DESCRIPTION OF THE PREFERRED EMBODIMENT(S)**

The detailed description set forth below in connection with the appended drawings is intended as a description of presently preferred embodiments of the invention and is not intended to represent the only forms in which the present invention may be constructed and/or utilized. The description sets forth the functions and the sequence of steps for constructing and operating the invention in connection with the

illustrated embodiments. However, it is to be understood that the same or equivalent functions and sequences may be accomplished by different embodiments that are also intended to be encompassed within the spirit and scope of the invention as set forth in the independent claims.

5 A lighted headwear system according to the present invention is shown in Figure 1, generally at **10**. Lighted headwear system **10** typically includes headwear **12** and an illuminating device **20**. Headwear **12** typically includes a crown **14** and bill **16**. Headwear **12** is shown as a typical baseball style cap, however, it would be appreciated that headwear **12** could be many other types of headwear including helmets, and the  
10 like. Illuminating device **20** is typically coupled to headwear **12** at the crown **14**, typically where the button of the baseball style cap would be. However, it will be appreciated that illuminating device **20** may be coupled to headwear **12** in many locations and may be used at any time – day or night time.

Illuminating device **20** is typically a cylindrical shape, being 0.25 - 1.0 inches in  
15 height and 0.25 - 1 inch in diameter and may emit light 360° about its circumference.

Figure 2 shows an illuminating device **20** according to one embodiment of the present invention. Illuminating device **20** typically includes a top housing **22** that is configured to couple to a bottom housing **34**, which in turn is configured to couple to a base **44**. Top housing **22** typically includes a translucent portion **24**, which allows the  
20 illumination from an illuminating element **26** to pass therethrough. Top housing **22** also typically includes a top housing coupling portion **30** that is configured to couple to bottom housing **34**.

Bottom housing 34 typically includes a recess 36 configured to receive power elements 48. Bottom housing 34 also includes a bottom coupling portion 40 which is configured to couple to base 44. Bottom coupling portion 40 typically includes apertures 42 configured to couple to base coupling portion 46 to couple base 44 to bottom housing 34.

Power elements 48 are typically batteries, but may be other types of devices that can deliver power to the illuminating device. It will be appreciated that although three power elements are shown, any number of power elements may be used to power illuminating device, as desired.

Figure 3 shows portions of the illuminating device in Figure 2, along with a portion of headwear 12. Bottom housing 34 again includes recess 36, as well as top coupling portion 38 that is configured to couple to the top portion. Top coupling portion 38 is typically threaded to receive top housing coupling portion 30 of top housing 22. It will be appreciated that even though top housing coupling portion 30 and top coupling portion 38 are shown as thread and screw type elements, many other coupling configurations may be used, as desired.

Bottom housing 34 again includes a bottom coupling portion 40, which in turn again includes apertures 42. Base 44 includes a base coupling portion 46. Base coupling portion 46 typically includes prongs 47 that are configured to fit into apertures 42 of bottom coupling portion 40 to couple bottom housing 34 and base 44. It will be appreciated that many coupling configuration may be used to couple bottom housing 34 to base 44.

Base 44 is typically placed on the inside of headwear 12, such that prongs 47 will extend through headwear 12 and couple base 44, headwear 12, and bottom housing 34. With this configuration, illuminating device may be coupled to headwear 12, however, it will be appreciated that many other coupling configurations may be utilized.

Figure 4 shows a bottom housing 34 and base 44, along with headwear 12 in a coupled position. Base 44 has base coupling portion 46 and prongs 47 that extend through headwear 12 and into bottom coupling portion 40 of bottom housing 34 to couple them.

Figure 5 shows the embodiment in Figure 4, with the addition of power elements 48. Power elements 48 typically fit into recess 36 of bottom housing 34. When power elements 48 are disposed within bottom housing 34, they may be forced down to bend prongs 47 to secure base 44 to bottom housing 34, thereby securing these portions of illuminating device 20 to headwear 12. Prongs 47 may be bent back to allow decoupling of the items.

Figure 6 shows the embodiment of Figure 5 with the addition of top housing 22. Top housing 22 typically includes a translucent portion 24, illuminating element 26, and control circuit 28. Power elements 48 are typically configured to power control circuit 28 and illuminating elements 26. Translucent portion 24 is configured to allow viewing of illuminating elements 26 from most, if not all, directions.

Illuminating elements 26 are typically light-emitting diodes (LED), however, other illuminating elements may be used, as desired. Control circuit 28 is typically

powered by power elements 48, and controls the operation of the overall system, including when illuminating elements 26 are illuminated.

Top housing 22 typically includes a top housing coupling portion 30 configured to couple to top coupling portion 38 of bottom housing 34. To energize control circuit 28 from power elements 48, top housing 22 is typically screwed down tighter, and loosened when power is to be disconnected. It will be appreciated that other configurations may be utilized to turn power on and off to control circuit 28 and illuminating element 26, including an actuator or switch configuration.

Figure 7 is another embodiment of a lighted headwear system 50, according to the present invention. Lighted headwear system 50 typically includes headwear 52 and illuminating device 60. In this embodiment, headwear 52 is a bicycle helmet, but other types of headwear may be used, as desired. Figure 7 also shows an alternative embodiment of an illuminating device.

Figure 8 shows an exploded view of lighted headwear system 50. In this embodiment, illuminating device 60 may fit between shell 54 and force dampening portion 56 of headwear 52. With this configuration, connecting structure 74 of bottom housing 70 is disposed between shell 54 and force dampening portion 56 to couple illuminating device 60 to headwear 52, however, other coupling configurations may be used, as desired.

Figure 9 shows an illuminating device 60, according to another embodiment of the present invention. Illuminating device 60 again typically includes a top housing 62 and a bottom housing 70. Top housing 62 typically includes an illuminating element

64, a control circuit 66 and power elements 68. Bottom housing 70 typically includes a recess 72 that allows illuminating element 64, control circuit 66 and power elements 68 to be disposed therein.

Illuminating device 60 is typically 1 - 4 inches long, by 0.25 - 2.0 inches wide, and 0.25 - 2.0 inches in height. It will be appreciated that the dimensions and configuration of illuminating device may vary, as desired.

Top housing 62 is typically configured to fit into recess 72, forming an interference fit to hold the other elements of the system therein, and to provide easy disassembly. Furthermore, top housing 62 is typically translucent to allow illumination from illuminating element 64 to pass therethrough. The control circuit 66 may be activated by pressing down on top housing 62 to activate switch 67 to alternately turn on and off power to control circuit 66, however, it will be appreciated that other activation configurations may be utilized, as desired. Furthermore, top housing 62 is typically flexible to allow activation of switch 67 by a user.

Illuminating element 64 is typically an LED, however other illuminating elements may be used as desired. Although two illuminating elements are shown in Figure 9, it will be appreciated that any number of illuminating elements 64 may be utilized, as desired.

Bottom housing 70 typically includes a connecting structure 74 that is configured to connect to headwear 52, or other headwear. Connecting structure 74 typically includes apertures 76, that will allow illuminating device 60 to be connected to headwear.



Figure 10 shows yet another embodiment of a lighted headwear system according to the present invention, generally at 90. Lighted headwear system 90 typically includes helmet 92 and illuminating device 60. In this embodiment, helmet 92 is a motorcycle helmet or other type of helmet.

5 Figure 11 shows a method of connecting illuminating device 60 to helmet 92 according to an embodiment of the present invention. Connecting structure 74 again includes aperture 76, and in this embodiment, bolts 78 extend through apertures 76 and helmet 92 and are secured to helmet 92 via nuts 80 that are threaded and configured to receive bolts 78. It will be appreciated that although nuts and bolts are shown as the  
10 method of fastening illuminating device 60 to helmet 92, other configurations may be utilized, including an adhesive, rivets, or other coupling configurations, as desired.

In all of the various embodiments depicted and disclosed, the illuminating device 60 may be such that the light emitted therefrom is emitted a full 360° therefrom or any lesser scale by way of shielding, as those of ordinary skill in the art will recognize.

15 While the present invention has been described with regards to particular embodiments, it is recognized that additional variations of the present invention may be devised without departing from the inventive concept.